REMARKS

Reconsideration and removal of the grounds for rejection are respectfully requested. Claims 1-21 were in the application, claims 1-21 were cancelled and new claims 22-40 substituted therefore.

New independent claim 22 combines original claims 1, 2 and 3 and has additionally been corrected to address the rejection under 35 U.S.C. §112. New claims 23-30, substantially repeat original dependant claims 4-6, 11, 12, 18, 20 and 21.

Claims 7, 13 and 19 have been placed in independent form, in view of their allowability, and presented with their corresponding dependant claims as new claims 31-40.

The examiner objected to the drawings as failing to show the pair of endless belts claimed in claim 3. However, the applicant believes this is unnecessary. Figure 2 shows the endless belts 18 and 22 which engage one side edge of the sheet, and the opposite side is a mirror image thereof. It is common practice to avoid showing such identical items, as one skilled in this art would understand the invention without such a figure. Nevertheless, a proposed Figure 9 is included which shows the endless belt means engaging the opposite edges of sheet F, and as this was completely described in the specification, no new matter is presented by this new figure.

The specification has been amended to insert reference to Figure 9, and to correct several errors. Also, the term "square" has been modified in the specification and claims, to "right angle" as this is believed to have been a translation error, as the pulling elements, are "square" as to the angle, but the more proper term is believed to be "right angle" elements.

The term "strip-like" was considered unnecessary and has been deleted from the claims, as was the term "or the like". The objectionable language in claim 18 has also been

removed.

By these amendments, the rejection under 35 U.S.C. §112 is believed to have been rendered moot.

Claims 1, 2 and 12 were rejected as being unpatentable over Kramps in view of Schmermund. By the cancellation of claims 1 and 2 in favor of new claim 22 which combines claims 1, 2 and 3, this rejection has also been rendered moot.

Claims 3-6, 11 and 18 were rejected as being obvious over Kramps in view of Schmermund in view of Draghetti. This rejection is believed to apply to new claims 22-30.

The present application relates to packaging of stacks of multiply paper articles, by wrapping each stack, or two or more stacks, with a heat-weldable wrapping sheet folded around the stack and welded along overlapped areas, so as to define a wrapping.

Known machines for packaging stacks of multiply paper articles typically include, as described at page 1 of the description, a first line for conveying stacks of articles; a second line for feeding the wrapping sheets, which, in a working station, places and maintains each sheet, so that it is kept dwelling in vertical position; a third line arranged perpendicular to the first line, form which the third line is fed and stepwise and crosswise to said working station, so that each stack gets engaged with a wrapping sheet, for packaging the stacks into a respective wrappings.

Examples of such a machine is described in Kramps U.S. 6,223,500.

The second line for feeding, placing and maintaining each wrapping sheet in a vertical position in correspondence of said working station has to accomplish an important task, feeding and placing a wrapping sheet in a vertical position in time relation with the conveying of a stack in correspondence of the receiving station of the third line. The second line also has to maintain the sheet under an appropriate tension during the wrapping operation, while

avoiding curling or stretching of the wrapping sheet during its wrapping around the stack.

The present invention is directed to constructing the second line to permit the receiving, location and the keeping of each wrapping sheet in a vertical and rest position perpendicular to the third wrapping line independently of the stack size, or of the material or of the number of stacks of articles being packaged arranged side by side. This object is achieved by utilizing a second line that includes first means and second means which contemporaneously act in a clamping manner against the two opposite surfaces of the wrapping sheet.

In particular, the first means are constituted by a pair of first endless belts 18 shown in Figure 2, mounted around idler wheels 19 and a driving wheels 20, so as to define a straight vertical section near the working station SO and to face the edges of a first surface of the sheet F.

The second means, in a first embodiment, include two operative sections, upper and lower, respectively. These second means include a pair of second endless belts 22, mounted around idler wheels 23 and driving wheels 24 sheet F and to define a straight vertical section near the station SO and to face the edges of another surface of the sheet F.

The lower part of the second means optionally has a pair of third endless belts 28 mounted around at least two wheels 29, one of which is a driving wheel, so as to face the edges of the same surface of the sheet, on which the belts 22 of the upper part work Z1.

The invention describes how to construct, dispose, operate and drive contemporaneously with the same speed the pair of first endless belts 18 and the pair of second endless belts 22 (and third endless belts 28) for feeding, placing and maintaining each wrapping sheet in a vertical position in correspondence of the working station.

Figure 7 shows in detail the variations of the driven speed in relation to the time. In

particular, the invention uses only first means and second means contemporaneously acting against the two opposite surface of a sheet for clamping, feeding, placing, and stabilizing the sheet in a vertical and rest position in the working station, without the use of suction means. In fact, it is possible to stabilize the sheet F in the working position only by the belts clamping action.

It is important to note that, as described on page 14 of the description, thanks to the contemporaneous and specific action of the pair of the first endless belts 18 and the pair of the second endless belts 22 which simultaneously clamp the two opposite surface of the sheet, during the hitting of the stack P against the sheet F, the upper portion Fs and the lower portion Fi of the sheet F are not subjected to curling or stretching.

In fact, the upper portion Fs of the sheet F is fed by the pair of first endless belts and the pair of second endless belts at a speed Vc equal to the speed of the extrusion of the stack from the opposite surfaces of the base 8 and pressing plate 33, while the lower portion Fi of the sheet F (in the first embodiment of the invention) remain tight on the inner runs 28A of the third belts, because it is rubbed against the latter by the combined action of the suction means 31 and the inner run 28A moving downwards, or (in the second embodiment of the invention) remains tight and rubbed against the inner run 18B of the first belts due to the action of the suction means 30.

In the invention, the use of suction means is not needed to stabilize the sheet in a vertical and rest position but can be utilized in cooperation with the driving of the endless belts to avoid curling and stretching of the sheet during the wrapping operation around a stack.

Schmermund, U.S. 3,385,026 relates to wrapping machines, with the object of providing a simple and improved arrangement for feeding wrapping material to an article to

be wrapped. A further object of this invention is to provide such a machine in which the wrapping material is removed from a conveyor therefor and is held stationary while being wrapped around an article so that the wrapping process is independent of the movement of said conveyor. (Col. 1, lines 31-46). On the contrary, in the present application, the wrapping process is strictly correlated with the movement of the pairs of the endless belts of first means and of second means.

"The embodiment of Figs. 1 and 2 comprises co-operating feed rollers 1 and 2 for drawing a web 3 of wrapping material from a storage roller or the like (not shown). A rotatable cutter 4 is provide at one side of the web 3 and a counter-cutter 5 which preferably is stationary is provided at the outer side of the web 3, the speed of rotation of the rotatable cutter 4 being such that suitable lengths of wrapping material are cut from the web 3. The cut lengths 6 of the wrapping material are fed under gravity to a conveyor generally indicated by reference numeral 7, the conveyor 7 having two parallel elongated conveyor belts 8 passing around and driven by rollers 9. The conveyor belts 8, thus move in an endless elongated path. The belts 8 travel around stationary suction means 11 communicating with the outside through perforations 12 for holding the lengths 6 of the wrapping material while fed beyond a path 13 for articles to be wrapped. The path 13 is formed by plates 14 and 15. Adjacent the conveyor belts 8 and at both sides of the path 13 suction devices in the shape of suction blocks 16 are provided. Control means 17, which are illustrated only diagrammatically, and are of any suitable construction known per se, are provided for controlling the suction effects exerted by the suction means 11 of the conveyor belts 8 and of the suction blocks 16" (Col. 1, line 59-Col. 2, line 12).

"The embodiment described operates as follows: a web 3 of wrapping material is drawn from the storage roller or the like by the two feed rollers 1, 2 and is cut into suitable

lengths by the rotatable cutter 4 and the counter-cutter 5. Each length 6 of wrapping material is held by suction to both conveyor belts 8 and is moved until the length 6 of wrapping material lies substantially symmetrical with regard to the feed path 13 for the articles 21. When this position has been reached the suction effect exerted by the suction means 11 of the conveyor belts 8 ceases, and the suction effect exerted by the suction blocks 16 starts so that the length 6 of wrapping material is removed from the conveyor belts 8, the belts 8 continuing to move. The suction effects are controlled by the control means 17 in timed relationship. The length 6 of wrapping material is held stationary by the suction blocks 16 independently of the conveyor belts 8." (Col. 2, lines 15-30).

"It will be observed that during folding the length 6 of wrapping material is removed from the conveyor belts 8 and is held slidably by the suction blocks 16. Therefore, the wrapping process is independent of the movement of the conveyor belts 8." (Col. 2, lines 38-42).

Schmermund does not give any hint in any part of the description as to contemporaneously clamping both the opposite surfaces of the wrapping sheet for receiving, feeding, placing and maintaining this sheet perpendicular to the feed path of the article to be wrapped. In fact, Schmermund only teaches feed by gravity of the cut sheet to a conveyor that holds the sheet only by the action of suction means that act on a sole first surface of the sheet while feeding it beyond the path 13 for articles to be wrapped and not by endless belts acting and clamping on both surfaces thereof. Schmermund removes the first surface of the sheet from the conveyor and holds the sheet by the activation of suction blocks 16 that act on the other second surface thereof, independently of the movement of the conveyor belt 8 that does not act and clamp any more on the first surface of the sheet. Schmermund has the wrapping process independent of the movement of the conveyor belts 8. Thus Schmermund

does not teach first means and second means which act simultaneously on both edge surfaces of the wrapping sheet 2 driving them to coordinate their movement with the wrapping process of the stack of articles.

Draghetti, U.S. 5,845,464, relates to a product wrapping method, for use on continuous overwrapping machines, particularly cellophaning machines for products such as packets or cartons.

"On overwrapping machines of the aforementioned type, a number of products are fed successively and at constant speed along a supply path to a wrapping station where a respective sheet of synthetic transparent material (normally polypropylene), is folded into a U about each product to be overwrapped. The product and sheet are normally mated with, no difficulty in the case of step-operated overwrapping machines, on which each sheet is usually arrested at the wrapping station until it is mated with the product. Problems arise, on the other hand, when both the sheet and product are fed continuously through the wrapping station, in which case, it is relatively difficult to keep the sheet in the correct position with respect to the product throughout formation of th wrapping." (Col. 1, lines 11-25).

The objection of Draghetti was to provide a wrapping method designed to satisfactorily solve that problem.

"Machine 1 comprises a conveyor 3 for feeding products 2 at a constant speed along a path P and through a folding or wrapping station 4, and a unit 5 for supplying station 4 with a succession of sheets 6, each for wrapping a respective product 2" (Col. 2, lines 16-20).

"With reference to Fig. 1, unit 5 extends from station 4 in a direction 17 perpendicular to direction 8, and comprises an unwinding assembly 18 for feeding a strip 19 of wrapping material towards station 4 in direction 17, and a cutting device 20 located between assembly 18 and station 4, close to conveyor 3, and for cutting strip 19 into a succession of wrapping

sheets 6." (Col. 2, lines 46-52).

"Unwinding assembly 18 comprises a pair of rollers 22 contacting opposite surfaces of strip 19 and mounted for rotation about respective axes 23 perpendicular to the Fig. 1 plane and to directions 8 and 17, and a drive unit 24 connected mechanically to rollers 22 and for rotating rollers 22 in opposite directions at an instantaneously adjustable angular speed. Cutting device 20 comprises a pair of rollers 25 located on either side of strip 19 and mounted for rotation about respective axes 26 parallel to axes 23; and a drive unit 27 connected mechanically to rollers 25 and for rotating rollers 25 in opposite directions at an adjustable, preferably constant angular speed. The peripheral surface of each roller 25 comprises a longitudinal blade 28, and rollers 25 are so synchronized as to bring blades 28 simultaneously into contact with, and so cut, strip 19." (Col. 2, line 57-Col. 3, line 5).

"As regards performance of the above operations, it should be pointed out that product 2 is fed along path P in what, in the example shown, is a constant movement, but which in any case is such as to feed products 2 to station 4 at constant frequency. As a sheet 6 must be formed by cutting device 20 for each product 2 traveling through station 4, device 20 must be so operated that its cutting frequency equals the frequency at which products 2 are supplied to station 4. As such, for wrappings 31 to be formed properly, which means no slippage whatsoever between sheet 6 and product 2 in the interval between the intercept and cutting instants, conveyor 3, assembly 18 and cutting device 20 must be linked by know electronic and control units (not shown) to establish a precise relationship between the movement of the products and sheet 6." (Col. 3, lines 32-47).

"On machine 1, therefore, any slippage between sheets 6 and products 2 is prevented by regulating the movement of sheets 6 that it is identical to the movement of respective products 2 between the intercept and cutting instants, and any change in format may be

effected substantially in real time by simply varying the timing or position of cutting device 20." (Col. 4, lines 28-34).

"In Fig. 3 variation, cutting device 20 is located close to assembly 18, and unit 5 comprises two known suction belts 32 and 33, the first of which is controlled by a drive unit 34 and is interposed between device 20 and station 4, and the second of which is located downstream from station 4 and controlled by a drive unit 35. Belt 32 successively receives sheets 6 cut by device 20 and feeds them to station 4, while belt 33 receives the portion of each sheet 6 extending beyond station 4 prior to the intercept instant." (Col. 4, lines 41-49).

Draghetti does not teach first means and second means for simultaneously acting on and clamping both edge surfaces of the wrapping sheet, using instead suction means to hold the sheet acting against a sole single surface thereof.

Thus, the person of ordinary skill in the art would find no teaching and incentive for the first means and second means for simultaneously acting on and clamping both edge surfaces of the sheet to better coordinate the receiving, feeding, placing and maintaining the sheet in a vertical position in the working station.

Consequently, the invention of claim 22 which has first means including at least one pair of first endless belts having inner runs cooperating with keeping means, the first endless belts being mounted around relative wheels and spaced part to engage, when operated synchronously, corresponding edges of a surface of said sheet, first belts forming a straight section passing through at least the station; second means including at least one pair of second endless belts mounted around wheels and spaced apart to engage, when operated synchronously and with the same speed as said first endless belts, corresponding edges of another surface of said sheet facing said second endless belts, said second endless belts defining a straight section situated in the upper part of said working station. (Claim 3).

Consequently, new claim 22 is new and inventive over the prior art, in particular over Kramps U.S. 6,223,500 in view of Schmermund, U.S. 3,385,026 and Draghetti U.S. 5,845,464.

As claims 21 and 22 have been cancelled in favor of new claims 29 and 30, and these depend from and contain all the limitations of claim 22 therein, the separate rejection of these claims over Kramps, Schmermund and Hammecher et al is believed to have been rendered moot.

Based on the above amendments and remarks, reconsideration and allowance of the application is respectfully requested. However should the examiner believe that direct contact with the applicant's attorney would advance the prosecution of the application, the examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,

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MARKED-UP SPECIFICATION

Page 6, new paragraph prior to the heading "Disclosure of the Preferred Embodiments":

- Figure 9 is a schematic partial top view showing in detail an upper section of first means and second means of the line feeding wrapping sheets to a working station.

Page 6, the paragraph A line numbers 21-22:

Wings 5A of [square] right angle, regularly spaced apart, pulling elements 5, run inside the above mentioned seats.

Page 7, the fifth paragraph, line numbers 15-17:

The film K passes through a so-called slow run 16, formed more precisely by the facing runs of three pairs of endless conveyors 16A, 16B, only one of which is shown in the Figure 2.

Page 8, the second full paragraph, line numbers 5-9:

The first means include a pair of first endless strip-like belts 18, only one of which is shown [if] in the Figure 2, mounted around idler wheels 19 and a driving wheel 20, so as to define a straight vertical section near the station SO and to face the edges of a surface of the sheet F.

Page 8, new paragraph prior to the last paragraph on the page:

Figure 9 shows how the endless belts 18 and 22 are disposed in mirror image on opposite sides of the sheet F, for gripping the sheet edges.